Chauvet Moving Light Service Guide for Service & Maintenance

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1. GENERAL INFORMATION

This Chauvet Moving Light Service Guidelines for Service & Maintenance V1 explains the error codes produced and the procedures for troubleshooting and repairing all the head modules, yoke, and base components for this product. Chauvet released this edition of the Chauvet Moving Light Service Guidelines for Service & Maintenance in November 2019.

1.1 TRADEMARKS

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1.1.1 COPYRIGHT NOTICE

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1.2 SERVICE MANUAL USE

Chauvet authorizes its customers to download and print this Service Manual for professional information purposes only. Chauvet expressly prohibits the usage, copy, storage, distribution, modification, or printing of this manual or its content for any other purpose without written consent from Chauvet.

1.2.1 PRINTING

For best results, print this document in colour, on letter size paper (8.5 x 11 in), double-sided. If using A4 paper (210 x 297 mm), configure your printer to scale the content accordingly.

1.2.2 INTENDED AUDIENCE

Anyone responsible for servicing this product should read this Chauvet Moving Light Service Referents Guide and become familiar with the procedures to be performed, before performing the procedures.

1.2.3 DISCLAMER

Chauvet believes that the information contained in this Service Manual is accurate in all respects. However, Chauvet assumes no responsibility for any errors or omissions in this document. Chauvet reserves the right to revise and make changes to the content of this document without obligation that Chauvet notify any person or company of such revision or changes. This does not in any way constitute a commitment by Chauvet to make such changes. Chauvet may issue a revision of this Service Manual or a new edition to incorporate such changes.

2. SAFETY NOTES

Read all the following Safety Notes before working on any Moving light. These notes include important information about this product.

Prior to performing any of the steps described in this Chauvet Moving Light Service Guidelines for Service & Maintenance, disconnect the product from power unless otherwise instructed in the procedure.

- Read all instructions prior to beginning any procedure.
- Wear safety glasses or goggles to protect your eyes.
- Do not perform any procedure in or near a wet location.
- This product may be hot. Keep away from flammable materials.
- Wait until the product is at room temperature before handling.
- Do not touch the lamp with bare fingers.
- The light source may be hot. Make sure the lamp is cool before re-lamping the fixture.
- When discarding any parts or product, be sure to follow all applicable local laws or regulations.

2.1 RISK OF ELECTRICAL SHOCK

- Removal of certain covers exposes connectors that carry potentially lethal electric currents. While working on a fixture under power:
- Make sure that the fixture is electrically grounded.
- Use a source of mains power that has ground-fault protection (such as an RCD) or an isolation transformer.
- Never touch any connector or conductive component with your body or a conductive object (uninsulated metal tool, for example).

2.2 RISK OFF UV-RADIATION & LAMP EXPLOSION

WARNING! Always wear safety glasses and gloves when handling lamps. The clear lamp bulb is integral with the ceramic lamp base. Do not try to separate the bulb from the base.

Discharge lamps emit harmful ultraviolet (UV) light that can cause eye and skin burns. In addition, they work under high temperature and pressure: lamps can and do explode. The explosion risk increases as the lamp ages and the quartz envelope weakens.

When used and disposed of as intended, lamps do not present any risk to health or the environment. Exposure to mercury can only occur if the glass bulb is cracked or broken. If this happens, the quantity of mercury released is very small and does not pose an acute risk to health, but the broken lamp should still be cleaned up as described in the product user documentation. For more information, see for example www.osram.com/mercury

To reduce the risk of injury while working on a fixture with a cover removed:

- Never operate the lamp outside the reflector unit.
- Protect exposed skin with a high-factor sunblock.

2.3 SAFE COMPONENT HANDLING

On earlier Moving lights and on other manufactures, you must power off the fixture before connecting or disconnecting any of the step motors. If you do not do this, damage to the motor drivers may occur. On newer moving lights may be not necessary, please ask the manufactures for more information, shut down power before disconnecting the CAN bus from any of the driver boards. The L6204 driver can be hot plugged, so shutting down power is not necessary.

WARNING! Some components and PCBs in older moving lights keep a high-voltage charge for some time after powering the fixture off. Consult the original service documentation for the product and use the discharge resistor supplied inside the product on the PSU and ballast before removing PCBs.

2.4 SAFE LIFTING

Moving lights are heavy (a Maverick MK 3 Profile weighs 34.7 kg, for example) and difficult to lift. They are top-heavy and they can move while you are carrying them. Many Chauvet fixtures require a minimum of two people to lift them (see product user documentation for details). Apply tilt locks and pan locks (if available) before lifting a moving head product, and be prepared for the head to move, changing the fixture's centre of gravity.

Know your limits. If in doubt, don't pick it up. A Maverick is an expensive item to drop, but it can be replaced. You can't. We recommend training in safe lifting and carrying techniques before you lift any product.

2.5 GENERAL GUIDELINES

Be prepared

- Check that you have read all service information on the product's
- Find out a product's software version before servicing it. Identical fixtures with different software versions may have different characteristics.
- Listen for noise coming from loose objects (e.g. screws, piece of glass, etc.) when moving a product
- Check the condition of the product's serial number label and the internal electrical connection labels.
- Check the product for any signs of rough handling or misuse.
- Check the product's maintenance schedule to see if any procedures are pending.
- Make a note of the resettable lamp hours and any other resettable service counters in the fixture's control menus.
- Disconnect the product from power and allow it to cool before you perform any service or maintenance procedure.
- Check that all wiring and connectors are in perfect condition. Replace any wire set that has broken wires or damaged connectors.

3. BEFORE YOU BEGIN

3.1 SERVICE PROCEDURES

- Service procedures performed, be sure to do the following:
- Unless otherwise instructed, turn the fixture off and disconnect it from power.
- Some service procedures may require that the product be powered on.
- Be sure to use caution when servicing a product that is connected to power.
- Only remove the panels and screws necessary to perform the desired procedure.
- Isolate the specific parts to be serviced or repaired. Some parts may require removal.
- Adjust, repair or remove the components according to the procedure.
- Reattach all panels and screws.
- Test the product to make sure it operates properly.

3.2 TOOLS AND ACCESSORIES

Suggested Tools and Accessories

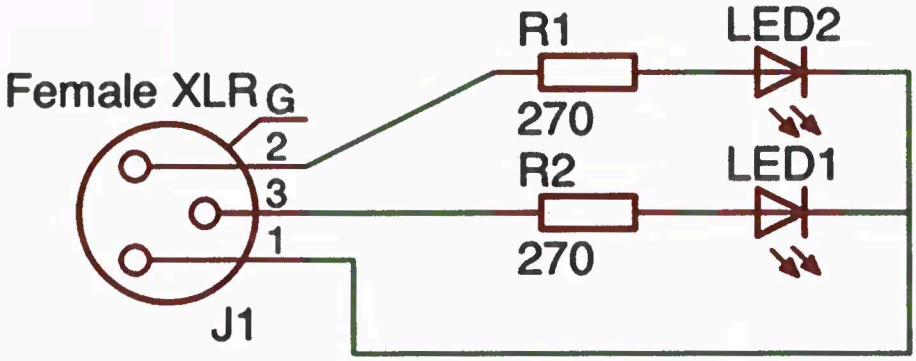
- Philips Number 1 screwdriver
- Philips Number 2 screwdriver
- Philips Number 0.0 screwdriver
- Philips Number 0.00 screwdriver
- Terminal screwdriver
- Hex head set from 1.5mm to 10mm
- Side cutters
- Long and standard Pliers
- Hex Socket Set 4mm to 13mm
- Digital Multimeter (DMM)
- Craft knife (Stanley knife)
- Spanner and Adjustable Spanner
- Digital Multimeter (DMM)
- DMX/RDM Tester
- Soldering Station
- Spring Tool
- Trim Tool
- Tweezers
- Drop magnet
- Gloves
- Safety glasses or goggles
- Zip ties (various sizes)
- Silver and black permanent markers
- Small Gear Puller
- Dremel with cutting wheel
- ESD Protection (wristband or static mat)

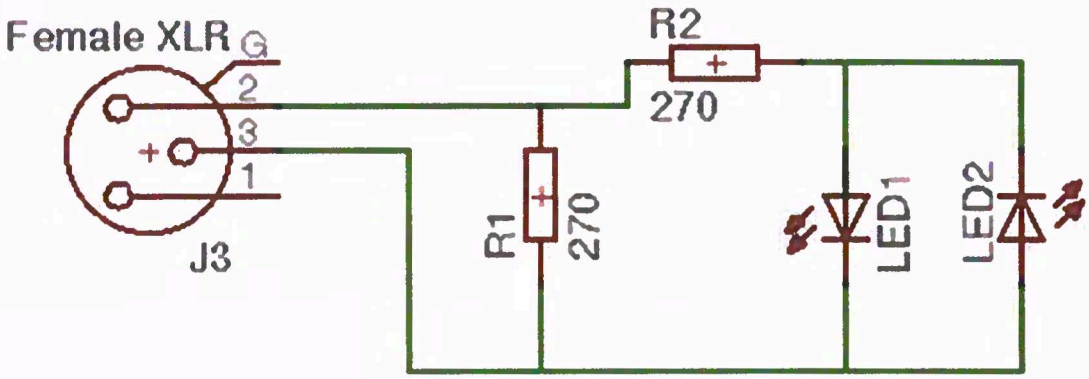
3.3 DMX/RDM TESTERS

- Handheld tester (RDM2GO)
- Lighting Desk (MagicQ PC/MAC)
- App (DMXcat)
- Line tester

3.4 DIY DMX LINE TESTER

Please note the can be made with both 3pin XLR or 5pin XLR





4. SERVICING AND SERVICE PERIOD

When Servicing units you need to think about the operating hours and condition of the unit, there is no right or wrong way of servicing units. When setting Service periods "Think of it Like a car service 10,000 mile's or 1 year" So as a rule of thumb set you Service periods as a yearly service unless the unit is been used in a very dirt environment "outdoor event or festival or a long tour" then you may wish to service more often like you would with a car.

4.1 ESD

Take the risk of ESD seriously and only touch PCBs and components when absolutely necessary.

In the workshop, work at an anti-static workstation on an anti-static mat that is electrically connected to ground and wear an anti-static wrist band.

To avoid ESD damage to sensitive parts such as PCBs, Hall sensors, optical sensors, and opto-couplers:

- Touch a metal part of a fixture (e.g., a part of the chassis) with your skin and with tools to equalize all electrical potentials before you touch or work on electronic components.
- Store PCBs in anti-static bags and store ICs in antistatic foam.
- Power a fixture off and allow capacitors to discharge before removing or
- inserting any components on the PCBs.

4.2 PCBs

Important! Dust and smoke residues can cause reduced component life and damage to components.

Electrical components mounted on PCBs are often located very close to each other. When smoke and dust particles collect on a PCB there is a risk that:

- Component life is shortened because of heat build-up.
- Components may short-circuit through conductive dust and smoke particles.

Both of these problems will affect performance and result in product downtime. Neglecting PCB cleaning can cause damage that is not covered by the product warranty and make repairs necessary.

4.2.1 CLENING PCBs

- Important! Always ensure that you are in an ESD-safe area and that you use ESD-secure equipment when handling and cleaning PCBs.
- Always use an ESD bag for storing PCBs.
- Use dust- and oil-free compressed air and an anti-static brush to remove excess dust and smoke residues.
- Make sure that the brush you choose has a suitable design.
- Be careful not to damage any of the components or the surface of the PCB.
- While cleaning, inspect PCBs for discoloration, brittleness and bent pins.

4.2.2 INSPECTING WIRES

- When servicing any intelligent light, you must ensure that all wires are securely connected and in good condition. Also inspect connectors for discoloration and brittleness.
- Check the wires at rotation points like yoke/head or base/yoke by pulling each wire from both sides of the gate. The wires must feel firm. If the copper inside the wire is broken, the wires will be elastic.
- Check the rotation points for discoloration caused by wires. This usually happens when fixing the wires with cable ties. Eliminate any stress placed on wires.
- Replace any damaged wire set.

4.2.3 CONNECTERS

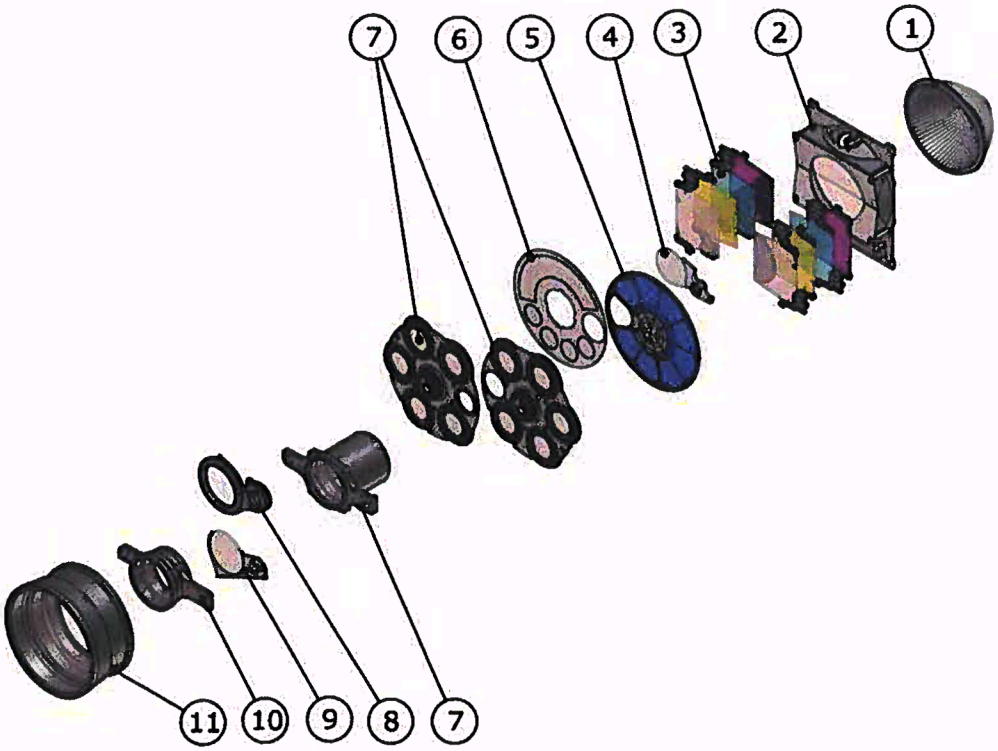
We us a range of connecters in the Moving lights other products, the connecters are manufactured by JST (Japan Solderless Terminals) with pitch size of 1.0mm 1.5mm 2.0mm, 2.5mm and 3.96mm, with header size from 2 way to 12way.

- 1.0mm SHJ Connector http://www.jst.co.uk/productSeries.php?pid=15979
- 1.5mm ZH Connector https://www.jst.co.uk/productSeries.php?pid=9735&series=109
- 2.0mm PH Connector https://www.jst.co.uk/productSeries.php?pid=6635&series=163
- 2.5mm XH Connector https://www.jst.co.uk/productSeries.php?pid=9640&series=136
- 2.5mm SM Connector https://www.jst.co.uk/productSeries.php?pid=8058
- 3.96mm VH Connector https://www.jst.co.uk/productSeries.php?pid=9017

4.3 CLEANING

Cleaning is essential in order to avoid overheating, as this can cause component failure and reduced lamp life. Follow the instructions in the product user documentation when cleaning.

4.3.1 CLEANING OPTICAL COMPONENTS



1. Reflectors
2. Heat filters
3. Colour mixing flags
4. Diffuser
5. Dichroic colour filters
6. Static gobo / FX wheel
7. Rotating gobos
8. Zoom lens
9. Prism
10. Frost flag
11. Focus lens
12. Front lens

Optical components have fragile coatings and are exposed to very high temperatures. Handle and store components with care.

- Always use clean white cotton gloves when handling glass parts.
- Apply the cleaning agents recommended in product user documentation to a

microfiber or lint-free cloth, not to optical components directly.

- Remove glass parts for cleaning if possible.
- Clean glass parts on both sides unless the product documentation gives other instructions.
- Reinstall parts in the same orientation as before you removed them.

Note that special precautions apply to Micro Fresnel lenses and heavy matted gobos.

4.3.2 CIRCULAR SHAPES

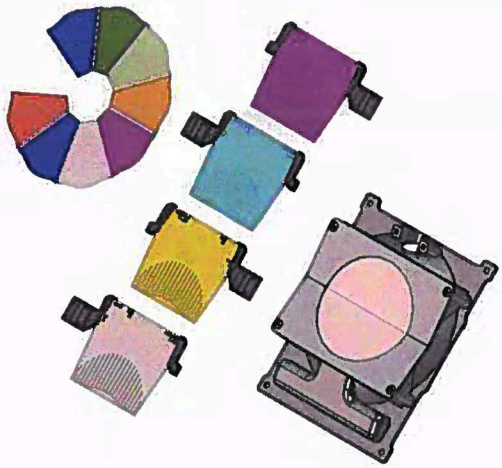
Clean by wiping with a slow, gentle spiral motion from centre to edge.

Dry with a clean, soft, lint-free cloth or low-pressure compressed air.

Remove stuck particles with an unscented tissue or cotton swab moistened with glass cleaner or distilled water. Do not rub the surface: lift particles off with a soft repeated press.

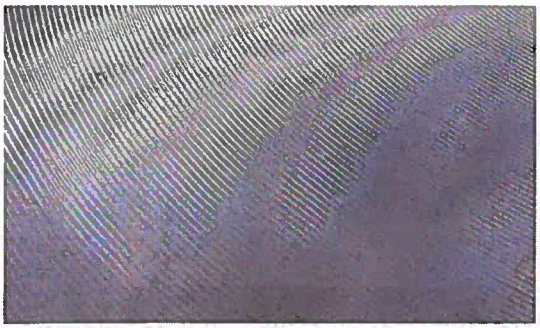
4.3.3 OTHER SHAPES

Use the above procedure when cleaning other shapes like CMYC flags and dichroic colour filters, but wipe gently in straight lines.



4.3.4 MICRO FRENEL LENSES

Important! Do not use concentrated alcohol solutions, abrasive products or solvents to clean a Micro Fresnel lens. If wiping with a soft, lint-free cloth dampened with distilled water is not effective, dampen the cloth with distilled water containing 20% isopropyl alcohol in solution.



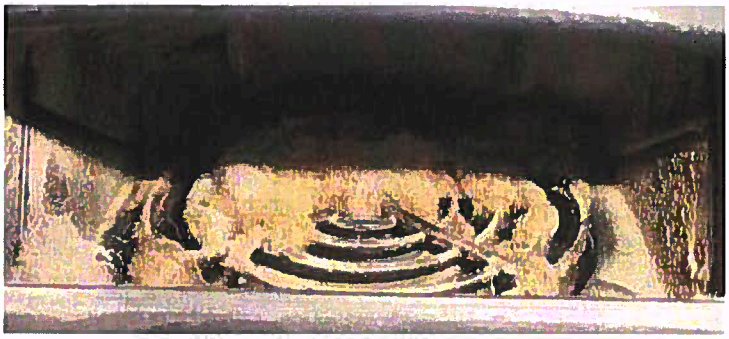
4.3.5 CLEANING FANS

Check that all fans are working when powering up a product, all fans will usually start up for a few seconds.

Replace fans when necessary.

Vacuum or use dust- and oil-free compressed air to clean fans if they are dirty.

Important! Prevent fan blades from turning when you clean a fan with compressed air or a vacuum. If you allow the fan to spin, the motor can burn out.



4.3.6 BELTS

A drive belt in good condition has no missing or damaged teeth, fraying or cracks. When you inspect a belt, activate the relevant effect by hand. For example, if the belt drives a colour wheel, rotate the colour wheel by hand. Replace any belt that is not in perfect condition.

4.3.7 LUBRICATION

We use Super lube oil and grease high-temperature lubricant on axles, iris gears and other surfaces that require lubrication. You may need to reapply this lubricant if required in the product maintenance schedule or if you install new parts. It is important to ensure that the correct amount of grease is used. Do not over-lubricate!

Before you reapply Super lube grease, it is important that you wipe the axles, rails or joints clean using paper towel.

When applying Super lube grease to an axle:

Apply a small amount of Super lube grease to the shafts of sliding components. To test if the amount applied is correct, move the sliding parts back and forth to distribute the grease. The sliding parts should only leave a very thin deposit of lubricant on the shaft. See photos on right.

Correct amount of Super lube grease

Incorrect amount of Super lube grease

https://www.super-lube.com/multi-purpose-synthetic-oil-with-syncolon-ptfe
https://www.super-lube.com/multi-purpose-synthetic-grease-with-syncolon-ptfe

4.3.8 FASTENERS AND LOCTITE

LOCTITE

We use Loctite thread lock on all set screws (this does not include self-tapping or sheet metal screws) to avoid problems due to the loosening of screws. The thread lock must be reapplied if set screws are loosened or removed for service.

We only use Loctite 243, which is blue in colour, and this product is readily available from fixing suppliers All fixtures machine screws are treated with Loctite 243.

Avoid getting Loctite on shafts or axles. A needle and syringe make an ideal application tool.

Set Screws

Start the screw and tighten it until you feel resistance as the screw reaches the limit of its movement. Back the screw 2 turns, apply one or two small drops of Loctite 243 to the threads, and then tighten the screw as you normally would.

https://www.henkel-adhesives.com/uk/en/product/threadlockers/loctite_243.html

5. GUIDE TO DO'S AND DON'TS OF THE SERVICING

5.1 DON'T

- Avoid using compressed air on fans and delicate optics/glass
- Use the right cleaning chemical on the optics
- Use the right lubricants, not WD40
- Spray the cloth not the unit

5.2 DO'S

- Cleaning of optics is very important
- Checking fans and removing dirt and debris
- Checking lamp hours
- Oil or grease only when needed

7. HOW TO CLEAN AND SERVICE

7.1 CLEANING MATERIALS

- Cotton buds
- Lint free wipes
- Micro fibre cloths
- Multi-purpose wipes
- Paper towels

7.2 CHEMICALS TO USE

- Glass Cleaner
- Anti-static cleaner
- label remover
- WD40
- Super lube oil
- super lube grease
- IPA (isopropyl alcohol 95%)

5. MAINTENANCE PRODUCT MAINTENANCE

Dust build-up reduces light output performance and can cause overheating. This can lead to reduction of the light source's life and/or mechanical wear. To maintain optimum performance and minimize wear, clean your lighting products at least twice a month. However, be aware that usage and environmental conditions could be contributing factors to increase the cleaning frequency.

To clean the product, follow the instructions below:

1. Unplug the product from power.
2. Wait until the product is at room temperature.
3. Use a vacuum (or dry compressed air) and a soft brush to remove dust collected on the external surface/vents.
4. Clean all transparent surfaces with a mild soap solution, ammonia-free glass cleaner, or isopropyl alcohol.
5. Apply the solution directly to a soft, lint-free cotton cloth or a lens-cleaning tissue.
6. Softly drag any dirt or grime to the outside of the transparent surface.
7. Gently polish the transparent surfaces until they are free of haze and lint.

Always dry the transparent surfaces carefully after cleaning them.

8. HOW TO CALIBRARATE YOUR MOVING LIGHT

Calibration is noon as Offset mode in the user manual, The Offset mode provides fine adjustments for the home position of all the moving parts in the optical path and the pan and tilt movements. This allows the moving parts to not show any border or to reduce the light output when in their home position. (Please note you perform is operation with DMX control to set the home position) To access this mode, follow the instructions below:

- Starting from the Main screen, press and hold **MENU** until the passcode screen appears (this can be over 10 to 20 seconds.
- Enter the passcode **2323** or **0920** using the buttons:
- Use **DOWN** to select the number to be changed.
- Use **UP** to increase the value.
- Repeat until **2323** or **0920** has been entered.
- Press ENTER This brings you into the Zero Adjust menu screen.
- Use the **UP** and **DOWN** buttons to scroll to the function you wish to change,
- Press **ENTER** you can now change the calibration of the function you wish to change; this is Hex levels 0 to 255 this is not the full movement it is micro steps of the stepper motor.
- When you have finished press **ENTER** to save or **MENU** to cancel the change this will set back to the last setting.
- After you have changed you can exit the Offset calibration by press and hold **MENU** unit you see the main menu. if you level the unit for more than 30 seconds the unit will time out.

When updating the software this will not affect any settings

9. TROUBLESHOOTING

The following example of troubleshooting for Maverick MK2 Spot, some of the issues that the Maverick MK2 Spot may exhibit are included in the table below, along with the corrective actions to take.

9.1 GENERAL ISSUES

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Product does not respond	No power to product	Check power connection and power main Check main PSU Check main fuse
Product does not respond to DMX controller	DMX not connected properly	Check DMX cables and connections Check address setting and DMX polarity Check pins on DMX cables Try another DMX controller Check for interference from nearby high voltage cables.
	Display not functioning	Replace display PCB
Fuse keeps blowing	Electrical load placed on the product may be too high	• Check total load on the product • Check main PSU • Check main fuse rating
One of the channels is not working	Stepper motor may be damaged	• Check stepper motor.
	Cable connected to PCB may be broken/loose	• Check connection or replace cable to PCB
	Check firmware version	• Update to the latest firmware version
Loss of DMX signal	Incorrect DMX cables	• Use only DMX cables
	Bad DMX cable	• check/replace DMX cable
	Bad data PCB	• Replace data PCB
	Data circuit on main PCB blown	• Replace main PCB
	Connection cables damaged	• check/replace connection cables between data and main PCB's
Not resetting	Check main/display PCB if no error message shows on screen	• Check/replace display PCB • Check/replace main PCB
	See Error Messages	• Follow corrective actions suggested
	POSSIBLE CAUSE	CORRECTIVE ACTION
	Bad Led PSU	• Check/replace PSU
	Bad thermal switch	• Check/replace thermal switch
	Broken Lamp cables	• Check/replace lamp cables
	Bad Led / PCB	• Switch LED for a known good LED • Check/replace PCB
	Bad/dirty fans	• Clean dirty fans • Check/replace fans
	Main PCB	• Check/replace main PCB
	thermal switch	• Check/replace thermal switch
	Bad motors	• Check/replace motors
	Broken Cables	• Check/replace cables
	Bad Sensors	• Check/replace sensors
	Defective driver PCB	• Check/replace driver PCB
	Loose motor shaft mount screws	• Check/tighten motor shaft mount screws

9.2 SOFTWARE FEEDBACK

Error Messages

In many cases, when a part or function fails, the Maverick MK2 Spot will show one or more specific error messages on the display. The messages in the following table show the error code and some of the options for corrective actions. The product must be reset in order to clear the error code.:

ERROR	ERROR DESCRIPTION	CORRECTIVE ACTION
CPU-A: R-Open	Temp sensor error	• Check connections • Check fans are operating properly • Check temp controller (sensor) connections (between head fans-inside bulkhead) • Replace temp controller (sensor)
CPU-A: Head Fan 1	Head Fan #1 malfunction	• Check connections with head fans • Replace fan
CPU-A: Head Fan 2	Head Fan #2 malfunction	
CPU-A: Base Fan 1	Base Fan #1 malfunction	• Check connections with base fans • Replace fan
CPU-A: Base Fan 2	Base Fan #2 malfunction	
CPU-B: X_op	Pan optical sensor count x malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper alignment with gear wheel (Optical Sensors) • Check motor shaft screws • Replace optical board (sensor) • Replace gear wheel
CPU-B: X_cm1	Pan magnetic sensor x1 malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper alignment with magnet (Magnetic Sensors) • Check for bent or damaged pan lock block • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on pan lock block)

ERROR	ERROR DESCRIPTION	CORRECTIVE ACTION
CPU-B: X_cm2	Pan magnetic sensor x2 malfunction	• Check connections and belts • Check for metal shavings, dust, or debris • stuck to magnet • Check for proper alignment with magnet • (Magnetic Sensors) • Check for bent or damaged pan orientation • arm • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on pan orientation arm)
CPU-B: Y_op	Tilt optical sensor count x malfunction	• Check connections and belts • Check for metal shavings, dust, or debris • stuck to magnet • Check for proper alignment with gear wheel • (Optical Sensors) • Check motor shaft screws • Replace optical board (sensor) • Replace gear wheel
CPU-B: Y_cm1	Tilt magnetic sensor y malfunction	• Check connections and belts • Check for metal shavings, dust, or debris • stuck to magnet • Check for proper alignment with magnet • (Magnetic Sensors) • Check for bent or damaged pan lock block • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on tilt gear)
CPU-C: CPU-C	Gobo/color motor driver PCB malfunction	• Check connections with motors and sensors Check Data 3 wire • Check jumper boards • Check board power (28V) • Replace PCB driver board
CPU-C: Gobo.R	Gobo Wheel 1 magnetic rotation sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris • stuck to magnet • Check to make sure the rotating gobo holder • with the magnet is in the correct gobo 5 slot. • Check all gobo holders to insure proper • movement • Check for proper alignment with magnet • (Magnetic Sensors) • Check motor shaft screws • Replace magnetic board (sensor) • Replace gobo holder (magnet)

ERROR	ERROR DESCRIPTION	CORRECTIVE ACTION
CPU-C: Gobo	Gobo Wheel 1 magnetic sensor malfunction	• Check connections • Check for metal shavings, dust, or debris stuck to magnet • Check for proper wheel alignment with magnet (Magnetic Sensors) • Check for bent or damaged gobo wheel • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on wheel)
CPU-C: Gobo2.R	Gobo Wheel 2 magnetic rotation sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet Check to make sure the rotating gobo holder with the magnet is in the correct gobo 4 slot. • Check all gobo holders to insure all rotate in both directions • Check for proper alignment with magnet (Magnetic Sensors) • Check motor shaft screws • Replace magnetic board (sensor) • Replace gobo holder (magnet)
CPU-C: Gobo2	Gobo Wheel 2 magnetic sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper wheel alignment with magnet (Magnetic Sensors) • Check for bent or damaged gobo wheel • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on wheel)
CPU-C: Colour	Colour Wheel magnetic sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper wheel alignment with magnet (Magnetic Sensors) • Check for bent or damaged colour wheel • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on wheel)

ERROR	ERROR DESCRIPTION	CORRECTIVE ACTION
CPU-C: Iris	Iris magnetic sensor malfunction	• Check connections • Check for metal shavings, dust, or debris stuck to magnet • Check for proper alignment with magnet (Magnetic Sensors) • Check for bent or damaged Iris fins • Check motor shaft screws • Replace magnetic board (sensor) • Replace magnet (on Iris arm)
CPU-D: CPU-D	Focus/Zoom/Prism motor driver PCB malfunction	• Check connections with motors and sensors • Check Data 2 wire • Check jumper boards • Check board power (28V) • Replace PCB driver board
CPU-D: Focus	Focus magnetic sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper alignment with magnet (Magnetic Sensors) • Check motor shaft screws • Replace magnetic board (sensor) • Replace focus slider cover (magnet)
CPU-D: Zoom	Zoom magnetic sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper alignment with magnet (Magnetic Sensors) • Check motor shaft screws • Replace magnetic board (sensor) • Replace zoom slider cover (magnet)
CPU-D: Prism	Prism magnetic sensor malfunction	• Check connections and belts • Check for metal shavings, dust, or debris stuck to magnet • Check for proper alignment with magnet (Magnetic Sensors) • Check motor shaft screws • Replace magnetic board (sensor) • Replace prism wheel (magnet)
CPU-E: CPU-E	Colour Mixing motor driver PCB malfunction	• Check connections with motors and sensors • Check jumper boards • Check Data 4 wire • Check board power (28V) • Replace PCB driver board

ERROR	ERROR DESCRIPTION	CORRECTIVE ACTION
CPU-E: Cyan	Cyan switch sensor malfunction	• Check connections and belts • Check for proper alignment with switch (Switch Sensors) • Check for damaged colour filter (chips/cracks) • Check CMY Slider for any nicks, dirt, and insure proper lubrication • Check motor shaft screws • Replace switch (sensor)
CPU-E: Magenta	Magenta switch sensor malfunction	
CPU-E: Yellow	Yellow switch sensor malfunction	
CPU-E: CTO	CTO switch sensor malfunction	

9.2.2 MULTIPE ERRORS

When multiple CPU- errors may show up on the display screen, it is usually a sign that there is an issue with the data feedback from the display board (CPU-A). Upon insuring that each of the main data connections are made and good, restart the product. If any or all codes remain codes remain, start troubleshooting in alphabetical order using the table above.

9.3 SENSORS

This fixture contains 3 types of sensors listed below. Before trying to physically adjust/remove the sensor it is best to check the following first:

- Check to see that the screws holding in the sensor are snug.
- Check to see that the settings in the Offset menu (See User Manual) have not been altered.
- Try adjusting the Offset menu settings.
- Check for distends between the sensor and the magnet.
- Ensure the magnet is actually working on the product. Over time with the constant heating and cooling of the product, magnets can wear out.

9.3.1 MAGNETIC SENSORS

1. Locate and follow the procedure to gain access to the magnetic sensor to be adjusted/replaced.
2. Loosen the screws on the sensor and align it accordingly.
3. Tighten the screws.
4. Make sure the magnet and the sensor pass with no more than 2 mm in between. Also take care that nothing is too close or rubbing on the sensor.
5. Calibrate the sensor by adjusting the values in the offset menu.

9.3.2 OPTICAL SENSORS

1. Locate and follow the procedure to gain access to the optical sensor to be adjusted/replaced.
2. Loosen the screws on the sensor and align it by making sure the optical wheel is centred through the centre of the sensor. Adjusting of the optical wheel may also be needed. See *Reassemble*
3. Tighten the screws.
4. Make sure the optical wheel is cantered in the sensor. Over time some warping of the optical wheel is normal, take care that nothing is too close or rubbing on the sensor when testing.
5. Calibrate the sensor by adjusting the values in the offset menu.

9.3.3 SWITCH SENSORS

1. Locate and follow the procedure to gain access to the switch sensor to be adjusted/replaced.
2. Loosen the screws on the sensor and align it accordingly.
3. Tighten the screws.
4. Make sure the item (usually Dichroic glass plate) can actually hit the switch (a click is heard when the switch is activated).
5. Calibrate the sensor by adjusting the values in the offset menu.

10. REPLACING PARTS

This chapter deals with replacing/repairing most parts on the Maverick MK2 Spot. Please read the following guidelines:

- Disconnect power from product before opening.
- Depending on the type of repair, most of the time it is best to remove all outer coverings before attempting any repairs.
- Reinstall screws using hand tools only! Only use a screw gun for removing screws!
- When reinstalling screws, it is best to reverse turn the screw until a bump is felt. This ensures that the screw is being installed correctly and helps to prevent cross-threading.
- Work in a well-lit and safe work area.
- Use a magnetic dish to store screws.
- Be sure to take notes of the types and sizes of screws that are being removed.
- Use pan and tilt locks to keep everything from moving.

11. FIRMWARE UPGRADE PROCEDURE

11.1 WEB BROWSER UPDATE

This chapter deals with the firmware upgrade procedure on the Maverick MK2 Spot. The following steps refer to the Windows® 7 operating system environment.

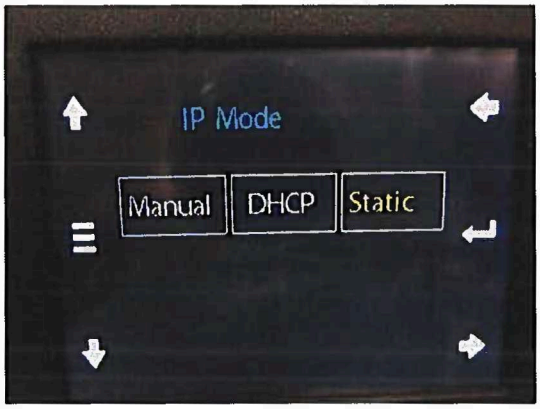
11.1.1 FIXTURE NETWORK SETUP

STEP 1

1. Connect the Maverick MK2 Spot to the router.
2. Verify the computer is using the same network as the Maverick MK2 Spot product.

STEP 2

1. From the Maverick MK2 Spot main level, navigate to **Network Setup** > **IP Mode**.
2. Select **Static**.



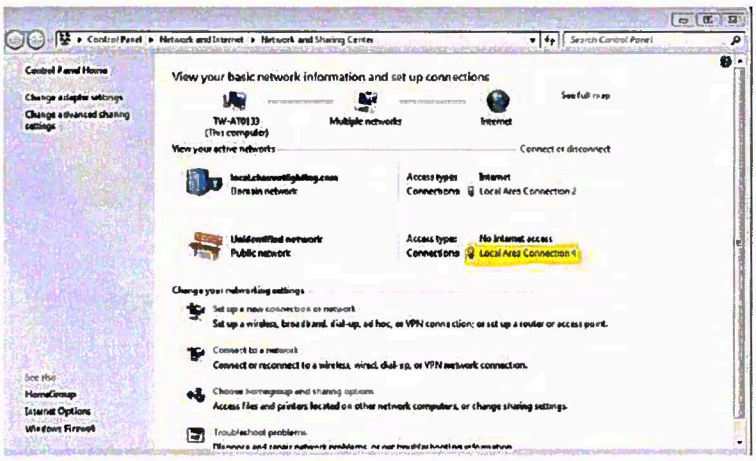
11.1.2 NETWORK SETTINGS

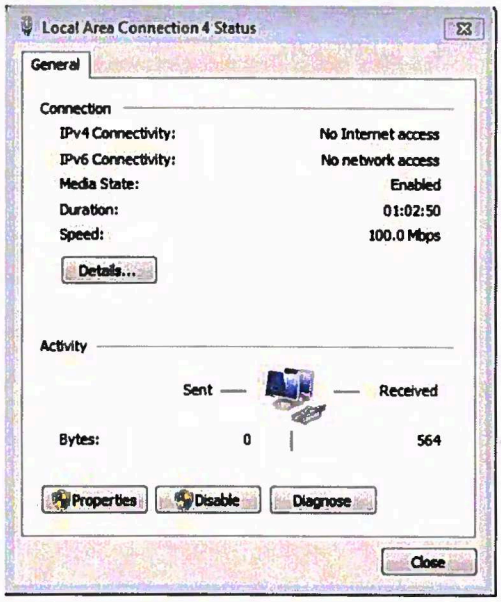
STEP 1

1. From the Windows® start menu, click the <**Start**> button.
2. From the Search box, type Network and Sharing Centre. Windows will generate the search results in the Start window.
3. Select Network and Sharing Centre and the Network and Sharing Centre dialog appears

STEP 2

1. Select the desired network the product is connected to.
2. Click Properties. The Local Area Connection Properties dialog appears.

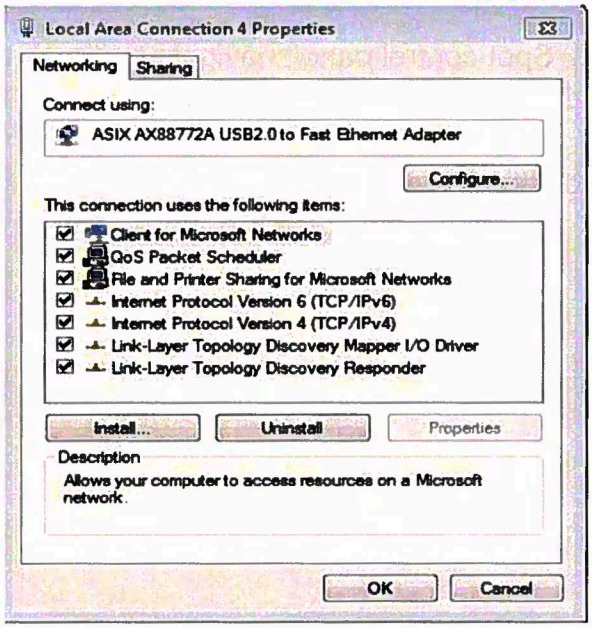

View your basic network information and set up connections
TW-AT013
(This computer)
Multiple networks
Internet
View your active networks
Connect or disconnect
Access type: Internet
Connections: Local Area Connection 2
Unidentified network
Public network
Access type: No Internet access
Connections: Local Area Connection 4
Change your networking settings
Set up a new connection or network
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
HomeGroup
Internet Options
Windows Firewall



• If you are running a hard-wired line from the PC to your router, then select Local Area Connection. The Local Area Connection Status dialog appears

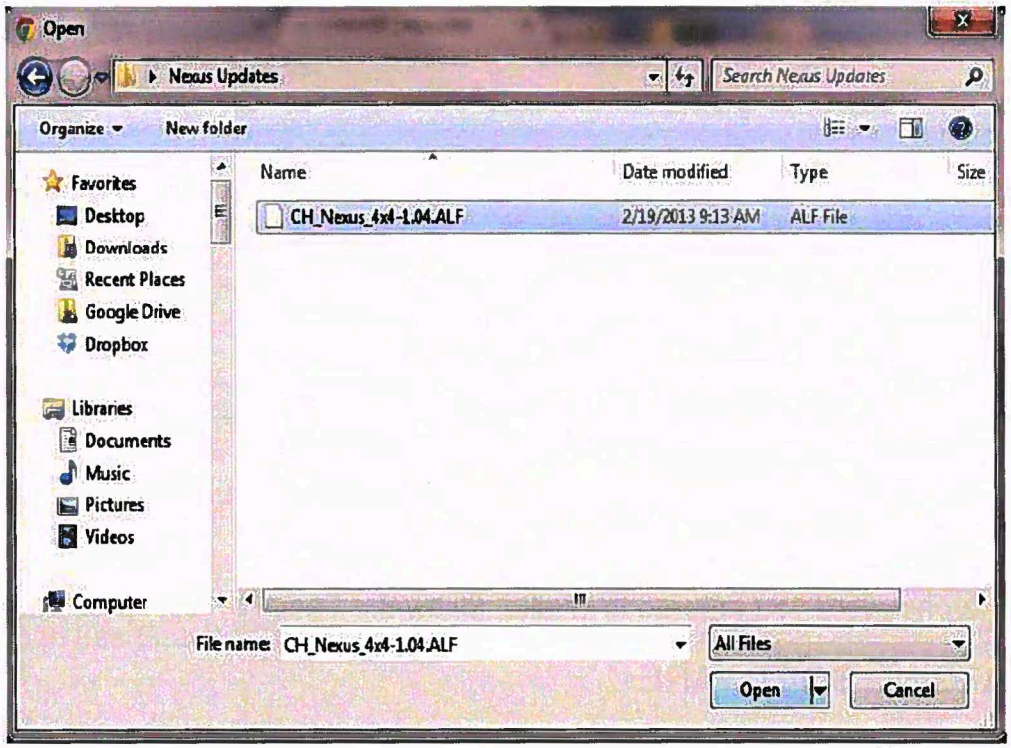
STEP 3

1. From the Networking tab, select Internet Protocol Version 4 (TCP/IPv4).
2. Click **Properties**. The Internet Protocol Version 4 (TCP/IPv4) Properties dialog appears.



STEP 2

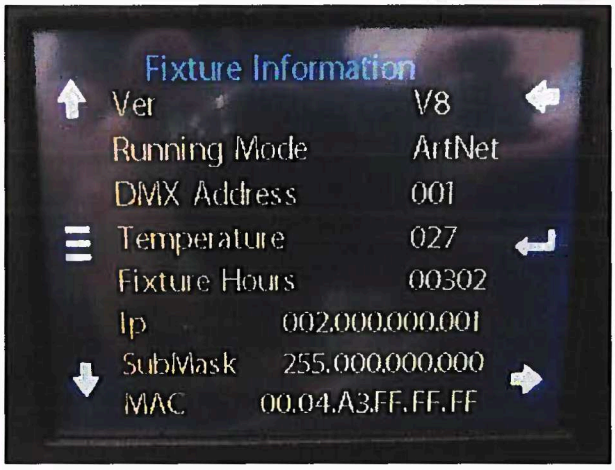
1. Click Browse and select the firmware file to upload into the Maverick MK2 Spot product.
2. Click Open.
3. Click **Upload File**
   - The "Downloading..." message appears in the product's control panel.
   - Once the firmware finishes downloading the software, the product will automatically reset the unit and the control panel flickers.
   - Do not turn off the product during the downloading process. It will take approximately 5 min before to reset.



STEP 3

1. Navigate to the **Information** main level.
2. Select **Fixture Information**.
3. Verify the product's control panel displays the uploaded version.

The software upgrade is now complete.

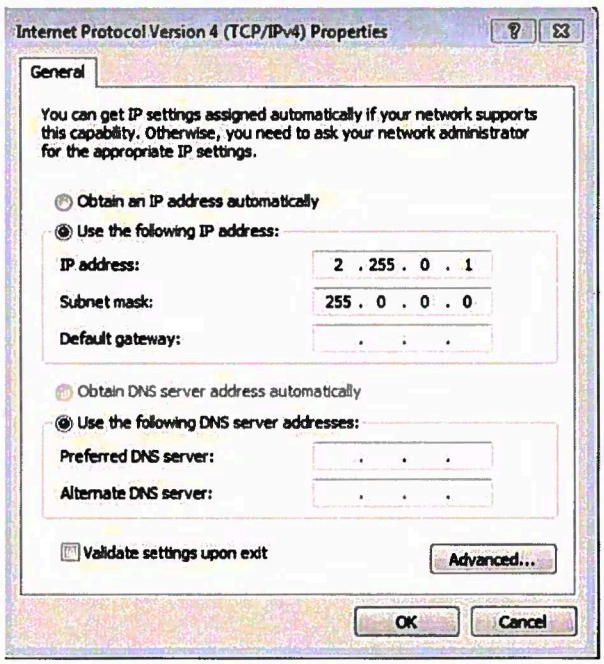


11.1.5 CHANGING BACK YOU'R IP BACK

STEP 1
Once the software upgrade is complete, the IP setting on your PC needs to be changed back to the original settings.

1. Refer to step #3 for navigation instructions on how to access the Internet Protocol Version 4 Properties (TCP/IPv4) dialog.
2. From the General tab, select Obtain an IP address automatically, and click OK.
3. Continue to close the dialogs displayed until you exit out of the Control Panel.

- The installation process is complete.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
2 . 255 . 0 . 1
Subnet mask:
255 . 0 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

11.2 MR/08 UPLOAD

11.2.1 INSTRUCATIONS

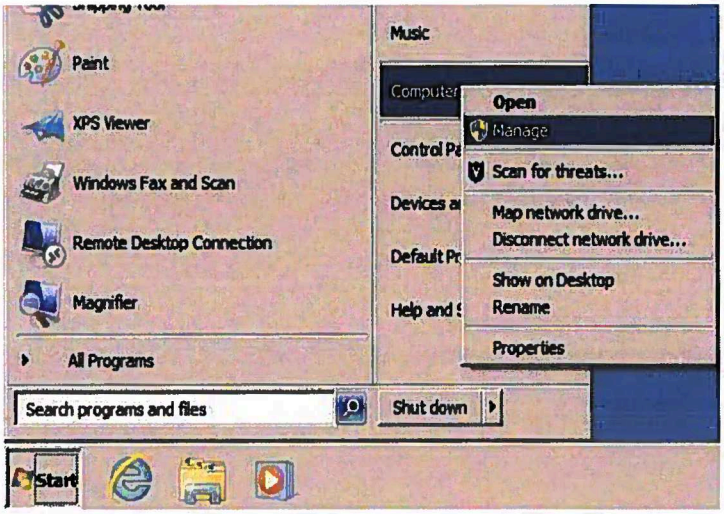
The MR/08 UPLOAD updates the firmware of Maverick and Rogue products through the DMX port. (See Compatible Products.)

PART 1
Preliminary preparations.

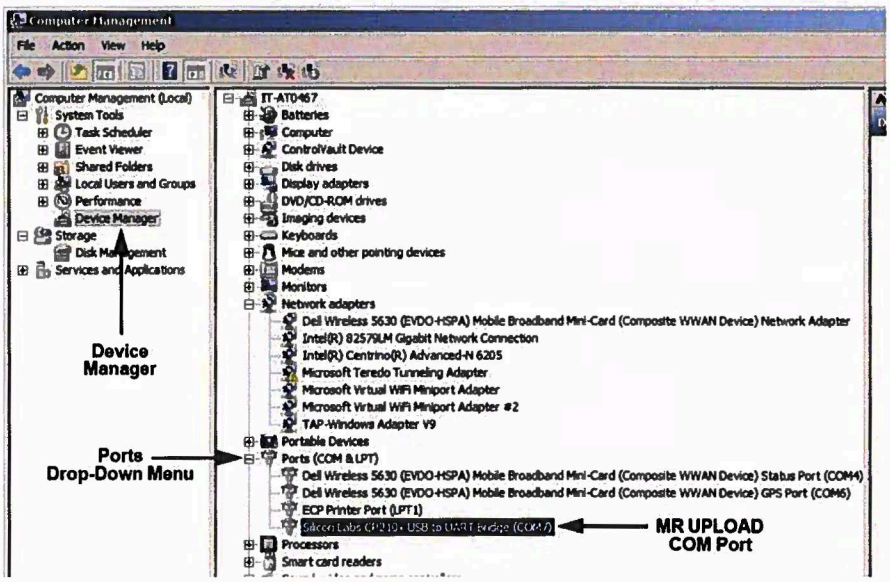
1. Install 08UploaderSetup.exe to a Windows PC (Windows XP or higher).
2. Plug the MR/08 UPLOAD into the PC with the included USB cable.

PART 2
Define the COM port of the MR/08 UPLOAD.

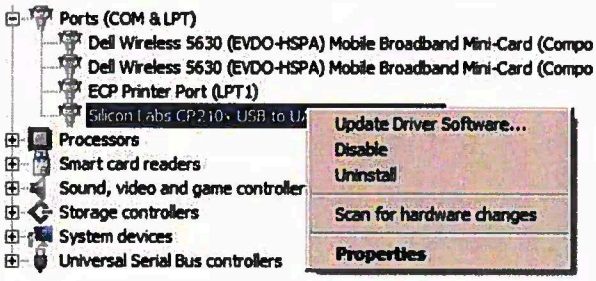
1. Open the Start menu and right-click on Computer. Click Manage.



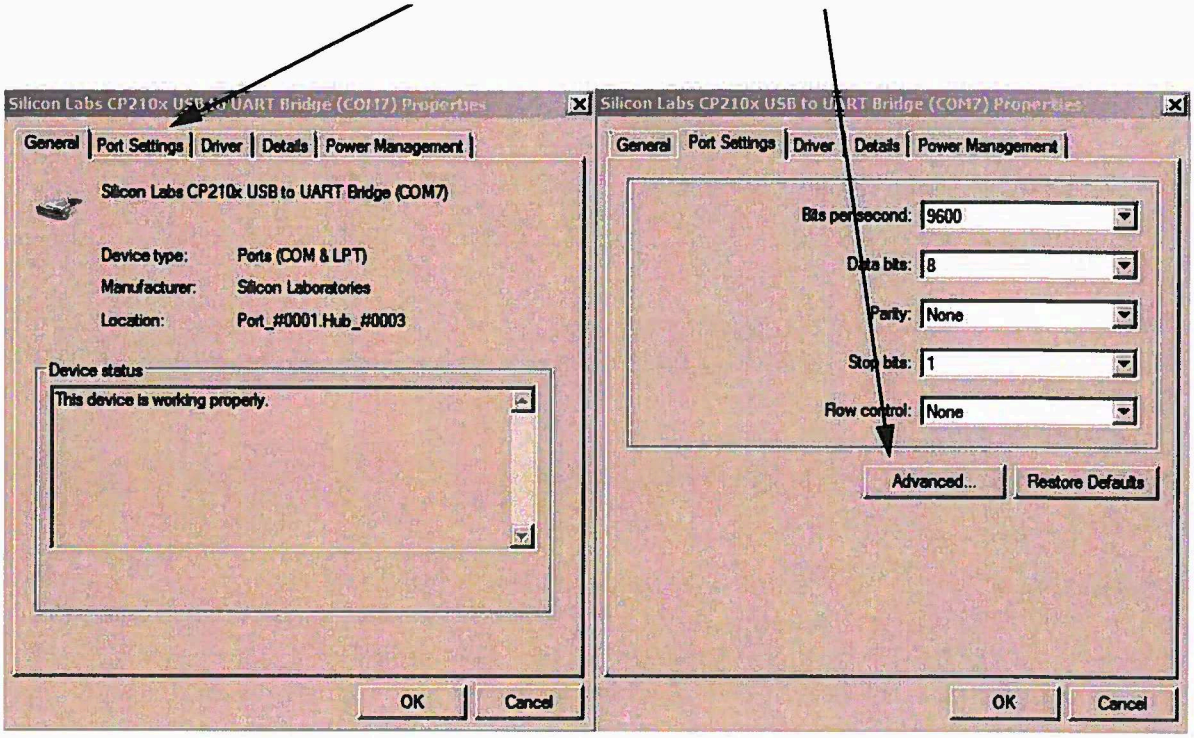
2. Click **Device Manager**, then open the **Ports (COM & LPT)** drop-down menu. The MR/08 UPLOAD will appear as **Silicon Labs CP210x USB to UART Bridge (COM#)**. The COM port is indicated in the parentheses.



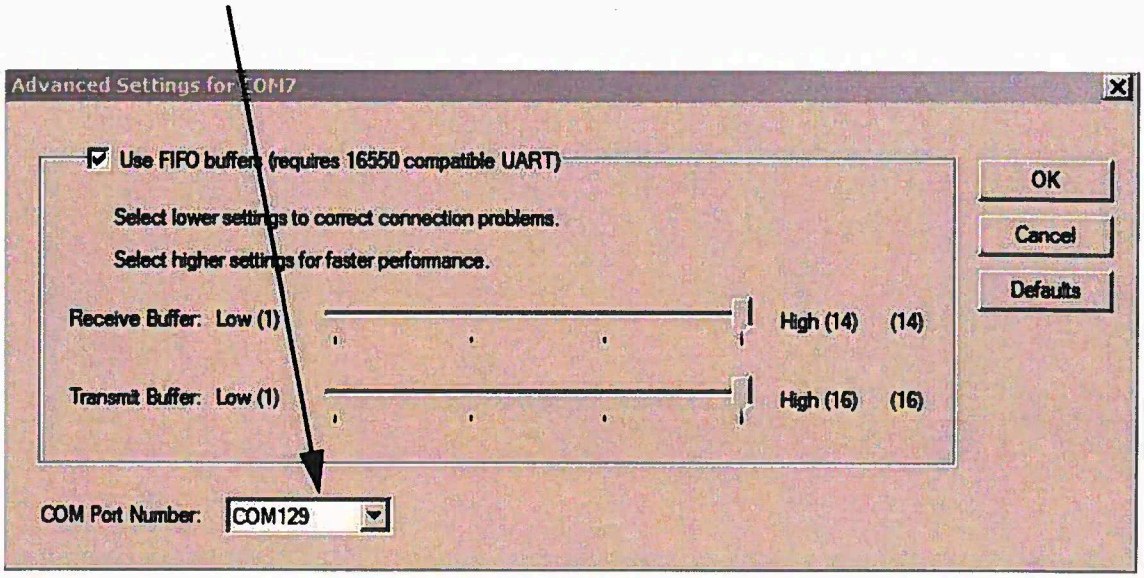
3. Right click over **Silicon Labs CP210x** and select **Properties**.



4. Once the window is open, select **Port Settings**. From port settings, select **Advanced**.

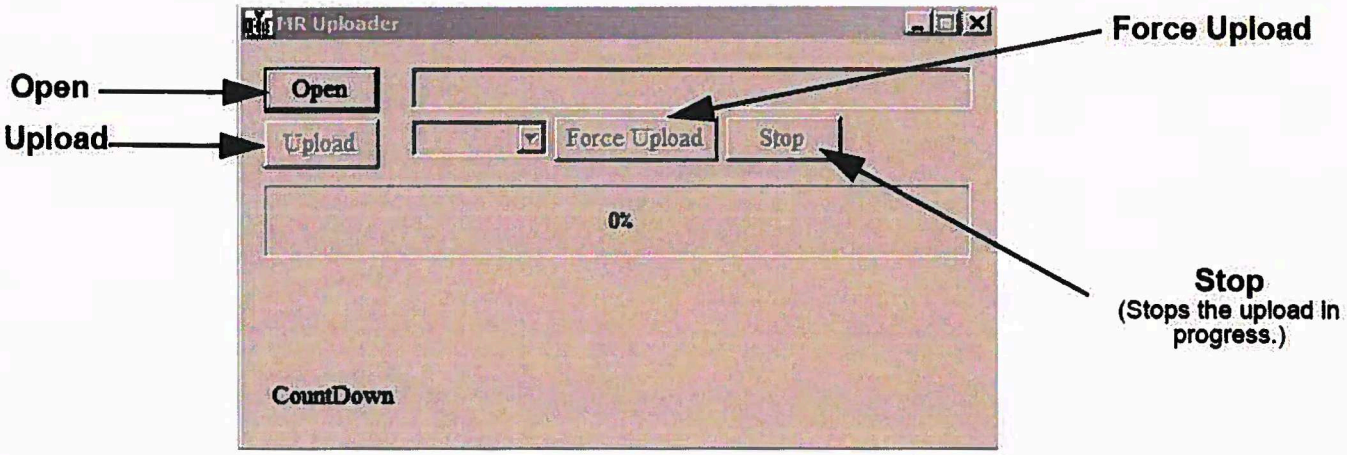


5. Change **COM port** to **COM129**.



PART 3
Set up the software.

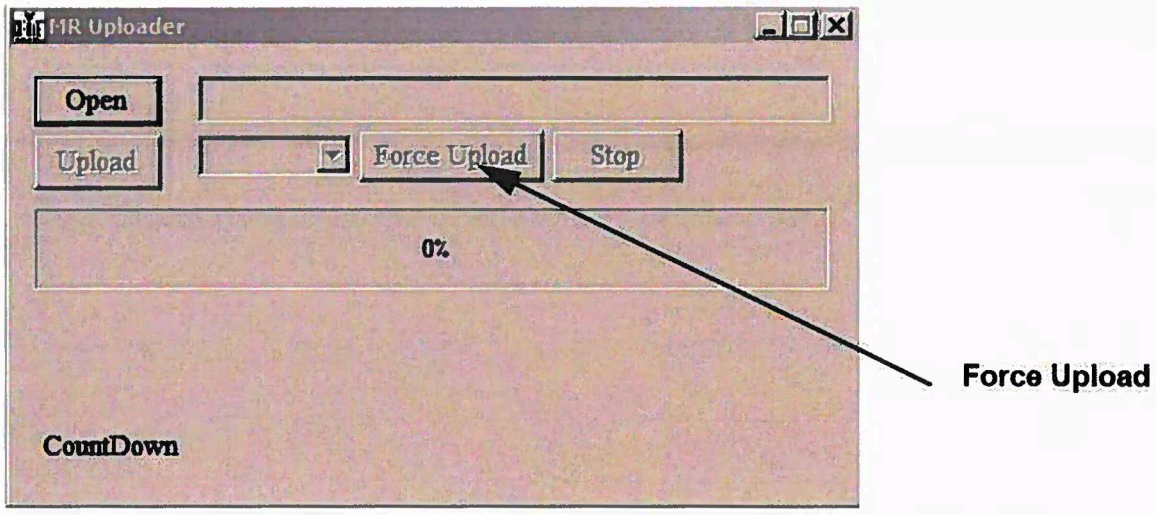
1. Run MR/**08Uploader.exe**.



2. Click **Open** and select the CL or CHL File to upload.

PART 4
1. Connect and upload to the product or products.
2. Connect a maximum of 10 of the same products to be updated together in a DMX daisy chain.
3. Power on all products.
4. Follow on-screen directions to upload products.

PART 5
1. If a product or products are not uploading, try **Force Upload** mode.
2. Power off the product. Do not disconnect it from the 08 UPLOAD.
3. Ensure that the LED indicator on the 08 UPLOAD is flashing.
4. Ensure the CL or CHL File to be uploaded to the product is selected.
5. Click the **Force Upload** button and follow on-screen directions.
6. If the problem persists, contact Chauvet Customer Service.



11.3 USB SOFTWARE UPDATE

The Maverick allows for software update through USB using the built-in USB port. To update the software using the USB flash drive, do the following:

Part 1. Power on the fixture and plug the flash drive into the USB port.

Part 2. Once the flash drive has been detected, the message "Upgrade Firmware" will be displayed. Press. If a different message appears on the display, search for the updated software in the Menu (Updated Firmware). A list of the updated software files will be displayed.

Part 3. Select the file that needs to be uploaded. The message "Are you sure?" will be displayed. Press.

Part 4. If the selected file is correct, the update will be completed. Restart fixture. If the selected file is incorrect, the update will fail, and the display will go back to the main interface. Repeat steps 1–3 using the correct file.

The CL or CHL format file needs to be placed in the MAVERICK folder in the USB flash drive

12. SOFTWARE/FIRMWARE

We are slowly switching over to GitHub for firmware updates, this has the following features

Customer and end-users can access them all directly online.
They can subscribe to a product, and it will email them when there is a new version
Better release notes

Chauvet DJ – https://github.com/Chauvet-DJ
Chauvet Pro – https://github.com/Chauvet-Pro

If you cannot access the software or have issues, please contact the technical or customer service team on +44(0)1773511115 Option 2 or email uktech@chauvetlighting.com

13. EXTRA MODE'S

13.1 BATTERY POWERED DISPLAY

The Maverick has a battery powered display which enables access to the menu when the product is powered off. Press and hold **<MENU>** until the display activates (approximately 15 seconds).

13.2 HOME SCREEN

The Maverick has a home screen that shows the current control protocols, personalities, starting addresses, IP addresses, and universes. To see the home screen, press **<MENU>** repeatedly until it shows on the display. From the home screen, touch any of the displayed control settings to immediately jump to that part of the menu, such as the personality, starting address, or universe, or press **<ENTER>** to reach the main menu.

13.3 CONTROL PANEL LOCK

The setting locks or unlocks the control panel.

1. Go to the **Settings** main level.
2. Select the **Lock Screen** option.
3. Select **NO** (control panel stays unlocked) or **YES** (locks control panel).

When the control panel lock is activated, the product will prompt for the passcode in order to access the menu. Enter the passcode as described below.

Passcode
After being prompted to enter the passcode, press **<UP>**, **<DOWN>**, **<UP>**, **<DOWN>**, **<ENTER>**.

13.4 TECHNICIAN MODE

The technician mode disables the pan and tilt motors, allowing the output of the product to be aimed by hand. To enable the technician mode of the Maverick Force 2 Profile, hold **<UP>** and **<LEFT>** while the product is powering on. When the product is turned off and back on, the pan and tilt will return to normal function.

12. CONTACT US

General Information	Technical Support
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Address: 3360 Davie Rd., Suite 509 Davie, FL 33314 Voice: (954) 577-4455 Fax: (954) 929-5560 Toll Free: (800) 762-1084	Voice: (844) 393-7575 Fax: (954) 756-8015 Email: chauvetcs@chauvetlighting.com Website: www.chauvetprofessional.com
Chauvet U.K.	
Address: Pod 1 EVO Park Little Oak Drive, Sherwood Park, Nottinghamshire, NG15 0EB UK Voice: +44 (0) 1773 511115 Fax: +44 (0) 1773 511110	Email: UKtech@chauvetlighting.eu Website: www.chauvetprofessional.eu
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Visit the applicable website above to verify our contact information and instructions to request support. Outside the US, the UK, Ireland, Benelux, France, Germany, or Mexico, contact the dealer of the record.